DOUBLE TOWER STAIRWAY

AS A SAFETY FACTOR IN SCHOOLS AND DORMITORY BUILDINGS

ADDRESS BY

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OF NORTH CAROLINA

BEFORE THE

TEACHERS' SUMMER SCHOOL AT UNIVERSITY OF NORTH CAROLINA

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The one thought and talk now is "War." It is generally accepted that President Wilson kept us out of the world-wide war as long as it was proper or possible to do so. Now our country is in the war and will do its full part in bringing it to such an end as will insure world-wide peace in the future.

A call has been made for soldiers, and the true manhood of the country is rapidly responding. Taxes—war taxes—are being levied and collected to meet the enormous expenses of the war. Liberty bonds have been offered for the same purpose and largely oversubscribed. A large fund has been raised for the Young Men's Christian Association to enable them to look after the spiritual and social interests of our boys. An immense fund has been subscribed for the Red Cross to do the necessary and noble work of nursing and caring for our soldiers when sick or wounded.

From one end of this broad land to the other the cry of "Preparedness" is heard. It is timely and necessary. The first step in preparedness by each one of you—in fact, by all—should be in your business, in your homes, in your schools, against your worst enemy, "Fire." There is no use in raising foodstuffs and then allowing them to be burned up. Secretary Redfield says Americans are the most wasteful people on earth. They do not look it; but they do it—careless in what they use and in what they throw away.

In one of his wonderful addresses to the Nation, President Wilson recently said: "This is the time for America to correct her unpardonable fault of wastefulness and extravagance. Let every man and every woman assume the duty of careful, provident use and expenditure, as a public duty, as a dictate of patriotism, which no one can now expect one to be excused or forgiven for ignoring." Is there any reason for crying out against this wasteful habit? There is at all times, but more especially in times like these when every little bit counts and is necessary for the successful progress of this great war.

It was only a few weeks ago we read of the burning of a grain elevator in Chicago and the loss of enough wheat to make 50,000,000 loaves of bread for the army. It is figured that this amount of bread would have supplied the army now with General Pershing in France for five years and two months.

Fire is our greatest preventable scourge. We burn each year one-half as many buildings in value as we erect. In North Carolina we

lose by fire each year over $3,000,000. Even as I am speaking to you there are enveloped in flames, dwellings, stores, schools, factories, theaters, and other classes of buildings. A fire starts every three minutes, and there is a continual conflagration. Not only valuable property, but still more valuable lives are endangered and lost.

The cost is immense. The firemen are greater than our army in peace, while apparatus and water-works cost more than battleships and munitions. The property loss each year exceeds the annual production of gold, silver, copper, and petroleum. The startling fact is that two-thirds of this great loss is preventable with even ordinary care.

Is it not well worth the trouble to give this care and attention and stop this waste? It certainly is, and I wish your active aid in North Carolina in teaching our people "Fire and Accident Prevention." No class can do more along this line than the teachers of the State. They are the educators of the youth of our State, and it is to these we must look for best results. They can be reached, and they are the future men and women of our State.

SCHOOL BUILDINGS

The magnificent school buildings throughout this country are a tribute to the splendid work of the architects who designed them, the builders who erected them, as well as to the great and growing interest in the education of our children. In most cases the heating, light, ventilation, and other desirable conditions are well cared for. Strange as it may appear, except in a limited improvement in the character of the buildings towards fireproofing, practically no attention has been paid to the safety of school buildings and dormitories for the inmates. A recent student of this problem, after a thorough investigation, wrote that school buildings in this country were so built that it might be written across each one of them, "Built to Burn." Rather a severe condemnation to be uttered against 250,000 buildings erected and used to house our children, so helpless if a fire occurs! A personal study and investigation made during the last three years convinces me that it is none too severe, and, alas! too literally true.

This subject should be of special interest to every one in this State because of the fact that the buildings in which the great disasters in loss of life occurring in other States are of the same class as the majority of the best school buildings erected in this State. The records show that for three years there were burned in this State an average of thirty-six school buildings a year, and it was most fortunate that no disasters in the way of loss of life occurred in these buildings. But we have no guarantee that a disaster such as is continually occurring

in other States may not at any time fall upon us here in North Carolina. Certainly there is no reason why the people of the State, and especially those in charge of the erection of school buildings and the care of the children in these buildings, should wait until a disaster occurs in North Carolina.

GENERAL DANGERS

Our school buildings are, of course, subject to all the fire dangers and conditions that give us an annual fire loss of over $250,000,000 in property and over 2,000 deaths and 6,000 casualties. This loss is from five to ten times as great as in European countries. How surprising, when we remember that our fire departments are much better and more efficient! Note that this property loss does not include necessary cost for fire protection, such as water supply, fire department, private fire protection, extra insurance premiums, and such like. These would add as much more. What is true of the Nation is true of North Carolina. The school building and dormitory will burn if improperly built, equipped, or cared for. Bad chimneys and flues, improperly erected heating plants, bad electric wiring, inflammable roofs, trash and rubbish, and other fire starters and promoters too numerous to be named, will all get in their work in school and dormitory buildings as they do in all other classes of buildings.

SAFETY OF CHILDREN

I am not so much concerned tonight in calling your attention to the danger of the burning of these buildings, however important and necessary this may be. It may be well to note here that much more attention is paid to the safe construction of mercantile and manufacturing plants than to school buildings. Shall we value our property more than our children? Its value and importance would merit and demand a longer discussion and more time than I can use tonight in trespassing upon your time and patience. My theme concerns the safety of the inmates. We sometimes figure on erecting our school buildings so they will not burn, but, passing strange! seldom consider the saving of the children and their teachers if the fire does come. You may well be surprised, for as startling as is the proposition, it is literally true. May I not enlist your active aid in changing this condition of things in North Carolina? Is it not worth your while from every viewpoint? Are the fathers and mothers of North Carolina to continue to allow the erection of such school buildings as are a menace to the lives of their little ones?

The school buildings erected in North Carolina may be divided into five classes:

1. Frame
2. Brick, metal-roof, hollow construction
3. Brick, metal-roof, mill construction
4. Brick, metal-roof, mill construction, with automatic sprinklers.
5. Reinforced concrete or fireproof building

I need not enter into a description of these different buildings. The frame, alas! is too well known to us, as well as the second class, brick, metal-roof, hollow construction. This is the class in which the great disasters of the country have occurred, and in which the bulk of our best buildings in this State belong. The third class, brick, metal-roof, mill construction, is the same as the second class so far as walls are concerned, but is built upon the mill construction plan, with no concealed spaces. The fourth is built exactly like the third class, but is equipped with automatic sprinklers. The record of automatic sprinklers is marvelous, not only in affording protection to buildings, but safety to the inmates. The fifth class is the fireproof building, usually reinforced concrete.

COST OF BUILDINGS

It is worthy of note that placing the second class, or the building usually erected in this State, as 100 per cent for cost, the third class will rate as 106 or 108 per cent, that is, cost 6 or 8 per cent more, while it will cost about 1 or 2 per cent to equip it with automatic sprinklers. The fifth or fireproof building is rated at 112 or 115 per cent. In other words, a fireproof building will cost about 12 or 15 per cent more to erect than the building usually erected in this State for school purposes, brick, metal-roof, hollow construction. These figures were obtained from architects and builders about eighteen months ago, but, I take it, will hold in their proportion, as the great increase in building material has been along all lines or kinds of material. It is worthy of note that the better the building the less its cost of upkeep, and that the fireproof building, because of its less depreciation, less need of repairs, and smaller rate of insurance, is much cheaper in the end than any other class of building. In fact, the difference in this upkeep will in seven or eight years pay the difference in the cost of the building.

As already referred to, the things that usually cause fires in other buildings will cause them also in school buildings and dormitories.

Build poorly, equip carelessly, and neglect to keep in proper condition, and the harvest of fires will surely come. *Don't forget it!* The remedy for this is plain: build as nearly fireproof as possible, equip safely, and give proper attention to keeping your house in order.

SAFETY ALL-IMPORTANT

Tonight I wish to focus your attention and thoughts on safety for school children. It is of more concern to you than to any one else, except the fathers and mothers of the children entrusted to your care. It is important and necessary as the school disasters occurring from time to time in other states are happening in the buildings of the class to which nearly all of our best school buildings belong. Do you take it in? I wish I had the power and eloquence to drive it into your minds and hearts. It would be better than for it to be brought home to you by a disaster in your school. My dear teacher, it would then be burned into your very being as you realized that you could not restore a single little life.

SPECIAL DANGERS

I wish to call your attention to two propositions, two special dangers that menace the lives of school children and should be guarded against:

1. *The Rapidly Spreading Fire.*
2. *The Smoke Panic.*

A consideration of these will show you how great a menace they constitute and how this danger may be met and removed.

1. *The Rapidly Spreading Fire.*—I need not dwell upon the danger of a rapidly spreading fire. When conditions allow the fire to spread rapidly—in fact, flash over the whole building, as it were—little opportunity is given to grown men and women to escape, much less to children. Most of our teachers are women, having the care of the children, and it is not fair, it is not just, to place on them, besides the heavy burden of a teacher's work, the anxiety for the safety of the children if a fire should come. If the character of the building and conditions do not make for a rapidly spreading fire there would be some chance to save the children, with sufficient exits and fire-escapes and the training by fire drills. Of course, we cannot rely absolutely upon either fire-escapes or fire drills, as is shown by the Peabody School fire in Massachusetts, and others. In this school 600 children were taken from the building one day with a fire drill in 1½ minutes and in a fire the next day twenty-one children lost their lives before 9:30 o'clock a. m. Evidently we must make our buildings as near fireproof as possible, provide sufficient exits, train and practice the chil-

dren regularly in fire drills. The best fire retardant or guarantee of a slowly spreading fire in any class of buildings is the elimination of all inside stairways and openings between the different floors. A fire naturally climbs a stairway, and rapidly because of the chimney-like draft. The same is true of elevators and openings through the floors from one story to another, whether in or outside of the walls. Then clearly to stop the rapidly spreading fire you must build fireproof or else stop all openings between different stories. Can this be done? Yes; by the *Double Tower Stairways.* About them I will talk later.

2. *The Smoke Panic.*—The rapidly spreading fire and its dangers can be met by a fireproof building, but unfortunately we cannot build all our school buildings fireproof; and this is not the only danger. You may be surprised to hear me say so, but an equally great menace, and one that lurks in the fireproof building also, is the second one referred to—"The Smoke Panic." The danger from the "Smoke Panic" has not, in my opinion, been sufficiently recognized or guarded against. Reliable statistics show that over 80 per cent of the casualties in school fires are not caused by burnings; in fact, the subjects are never touched by fire. Smoke filling a room or building naturally causes uneasiness and a panic, especially when its source is unknown. The farther the subject is from the fire the greater the fear and panic, even when there is no real danger. A striking case in point was the near-panic in the Realty Building, Charlotte, N. C., some months ago, when the firing of less than one-half bushel of trash in the basement came near causing a serious panic and loss of life, although there was never any danger. Smoke filled the building and made the trouble, though the building was practically a fireproof or slow burning office building.

Clearly, the remedy is to prevent the spread of smoke from one story to another. This is to be accomplished by cutting out stairways and openings between the different stories. This is necessary in the fireproof as well as other classes of buildings. To remedy the smoke panic effectively even the fireproof inside stairway must go, for when the door is opened on any floor filled with smoke, if only for the entrance of one escaping, the stair is filled with smoke and it cannot get out or be removed. People are unwilling to entrust themselves to even a fireproof stair filled with smoke. Then to remedy this it is necessary to cut out all stairways and openings between floors. To do this, and thus remedy the two special dangers in school buildings—the Rapidly Spreading Fire and Smoke Panic—is the object aimed at and the remedy proposed in "The Double Tower Stairway."

DOUBLE TOWER STAIRWAY

The Double Tower Stairway is an adaptation of what was known as the Philadelphia Double Tower Fire-Escape to stairway use. The Philadelphia Double Tower Fire-Escape is a tower composed of two partitions and was sought to be used only as a fire-escape. In an account of its use by a manufacturer I was struck with the statement that the workmen who were accustomed to use it as a stairway also were enabled by their knowledge of it to use it more rapidly in getting out of the building in fire drills. Then came the idea to me, Why not use it as a stairway altogether, and thus cut out of the building the inside stairways and all openings between the different floors? A careful study of the proposition, getting all the help that I could from architects and all who were interested in or would talk to me on the subject, convinced me that the idea was a good one and could be used to advantage in school buildings. After satisfying myself as to school buildings, I began a study of its use and adaptation to dormitories. and believe that it is the thing for both school buildings and dormitories in order to insure the safety of the inmates.

For convenience, I will designate the two divisions or departments of the tower the "vestibule" and "stairs" divisions. The vestibule division is the one that is entered before you pass into the stairs division where the stairways are placed and in which you can go up or down even from the basement to the top floor without reëntering the vestibule division.

ADVANTAGE OF THE DOUBLE TOWER STAIRWAY

1. *Its Adaptability.*—The vestibule part of the tower is the only part that must touch the building. The stairs division can, as it were, revolve around the vestibule portion, fitting to it in almost any way. It is adaptable to every class of building from the frame to the fireproof. It can be worked with the basement as well as with any other floor. The Double Tower Stairway can be attached to any building or any part of a building and as many worked in as are necessary for complete protection. It is adaptable to use for fire drills and does not carry with it the dangers inherent in the use of fire-escapes. It is easier and safer to use for fire drills as well as for use when a large fire occurs. In fact, escape from the building throughout can be more rapid because the inmates by everyday use of the tower and its stairways understand and feel at home in passing through them.

2. *Its Safety.*—The Double Tower Stairway is the only plan to cut out inside stairways and openings between floors and thus provide complete safety against the rapidly spreading fire in all buildings not

fireproof, and against the smoke panic in even fireproof buildings. The best that can be done in the usual building with inside openings between the floors by the use of fire-escapes and fire drills is to give a 10 per cent or 15 per cent protection, while the Double Tower Stairways with no opening between floors will furnish practically 100 per cent safety. It will make a frame building safe for those who occupy the second story. Although it will not keep the building itself from burning, it gives the necessary time for the inmates to get out.

3. *Its Cost.*—The main thing that has been urged against the use of the Double Tower Stairway is its cost. This is putting an opposition upon a false basis, and shows that the proper use of the stairway is not grasped. It will not add to the cost of any building when worked out in the plans of the building. Its use cuts out the inside stairways with their cost and allows the halls to be made smaller, thus saving not only the cost of inside stairways, which must be made more expensive and finely finished than those in the tower, but saves the cost of the extra width of the halls. While the walls to the main building must be standard and increased at least one-half a brick with each story, the outside walls of the double tower do not call for this thickness. Their use saves the extra cost of fire-escapes, making them unnecessary. While it is advisable wherever possible to have an auditorium on the first floor, even at additional cost, an auditorium on the second floor can be made safe by the use of the double tower. The use of the double tower stairway will save the space taken up by inside stairways as well as allow a decrease in the width of the halls. This will give the additional space for use in the building or else cut down the size and thus the cost of the main building.

4. *Less Uneasiness and Noise.*—Their use in school buildings is a great advantage, because they cut out the noise and confusion incident to the dismissal of classes from one part of the building while other classes are still in session. The noise caused in this way in buildings with inside stairways is the cause of much confusion and annoyance. The use of these stairways impresses the teachers and parents with their great advantage, making for the safety of the children, and thus are a wonderful help to both teachers and parents in their satisfaction and peace of mind as to the danger to the children in case of fire. Where used the principals and teachers of the schools are no longer burdened with anxiety for the safety of the children entrusted to them in case of a fire. They realize that even with sufficient exits in the way of fire-escapes there is still great danger resulting from a panic.

5. *Unit Divisions.*—They can also be used to great advantage in dormitories in providing a division of units. By their use each floor

of a dormitory can be made a unit, and by dividing dormitories by fire walls and placing fireproof double towers at each fire wall double exits from the dormitory can be provided at a cost of only one tower for each unit between fire walls.

Of course, there are many other uses and advantages of the double tower stairways that might be given or will readily occur to each one of you. The subject only has to be studied to make an impression and gain a hold upon your mind that it is the way of all others for protecting our children and students in school buildings and all persons occupying dormitories. I know of no other plan that will give absolute safety to the inmates of our State institutions as well as to our children and students in schools and colleges.

In conclusion, I would say we are making progress in erecting this safe class of school buildings in our State. Already there are school buildings with Double Tower Stairways in Raleigh, Gastonia, Reidsville, Mount Airy, Burlington, Shelby, Albemarle, Thomasville, Conover, Pink Hill, Peachland, and other places. That they are practicable and not merely theoretical buildings is shown by their successful use, and the following letters:

From the Superintendent and two Principals of the Raleigh Schools:

RALEIGH, N. C., May 16, 1917.

HON. JAMES R. YOUNG, *Insurance Commissioner, Raleigh, N. C.*

DEAR SIR:—You ask my opinion of the tower arrangement at the new Lewis and Murphey schools

After several months experience with them, I am bound to admit that they are a success. Not only do they rid us of anxiety as to fire danger, but they separate entirely the lower floor from the upper floor, making the discipline much easier and the rooms less disturbed by noise. The children pass from the second floor to the lower floor without disturbing each other in the slightest degree. The fact that there are two stairways, one at each end of the building, separated from the building, enables the children to get out of the building much quicker than if there was one broad interior stairway connecting the first and second stories.

Experience has demonstrated that the plan works well.

Cordially yours, FRANK M. HARPER,
Superintendent.

RALEIGH, N. C., May 17, 1917.

DEAR MR. YOUNG:—We are very much pleased with our tower stair arrangement. It minimizes danger, keeps down noise in the halls, and provides a satisfactory arrangement for getting in and out of building without disturbing primary classes which have recesses at different hours from older grades.

A great many parents have expressed their satisfaction over the tower stairs, saying that their "peace of mind is so much better than under the old arrangement." That, of course, means a great deal.

I never feel the apprehension for the children's safety that I used to feel in the old school. We are safeguarded as far as possible in our new school.

Very truly,

MARY W. QUINN,
Principal Murphey School.

RALEIGH, N. C., June 23, 1917.

HON. J. R. YOUNG, *Raleigh, N. C.*

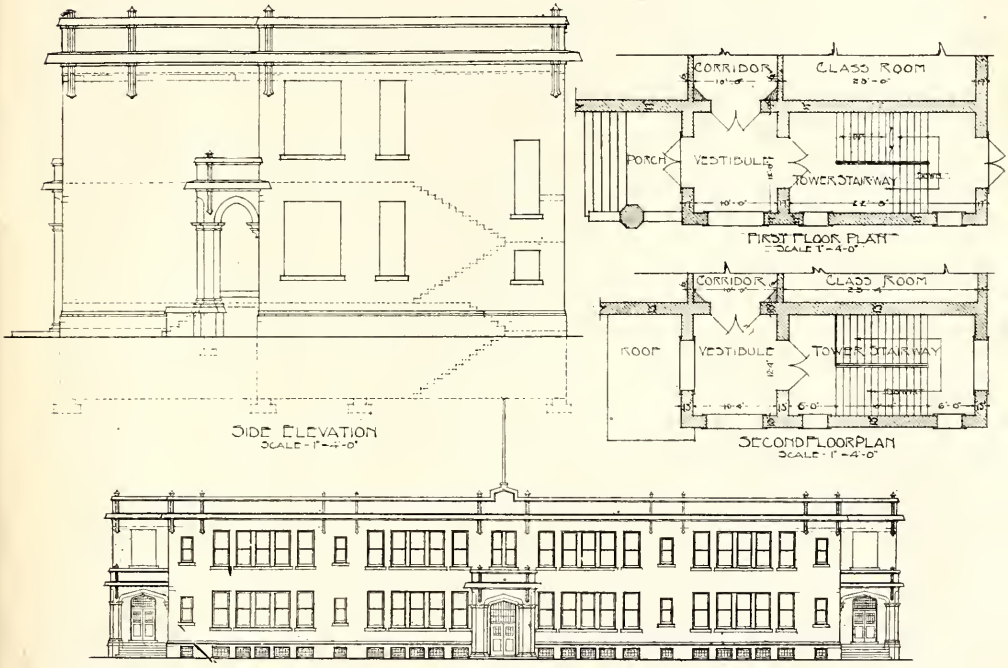
DEAR MR. YOUNG:—I am very much pleased with the new Lewis School. The arrangement of the staircases in towers, one at each end of the building, has proved quite satisfactory. Not only is the danger from fire almost entirely eliminated, but the amount of noise is greatly reduced, as the sounds in the towers are not heard in the rest of the building.

Very truly yours,

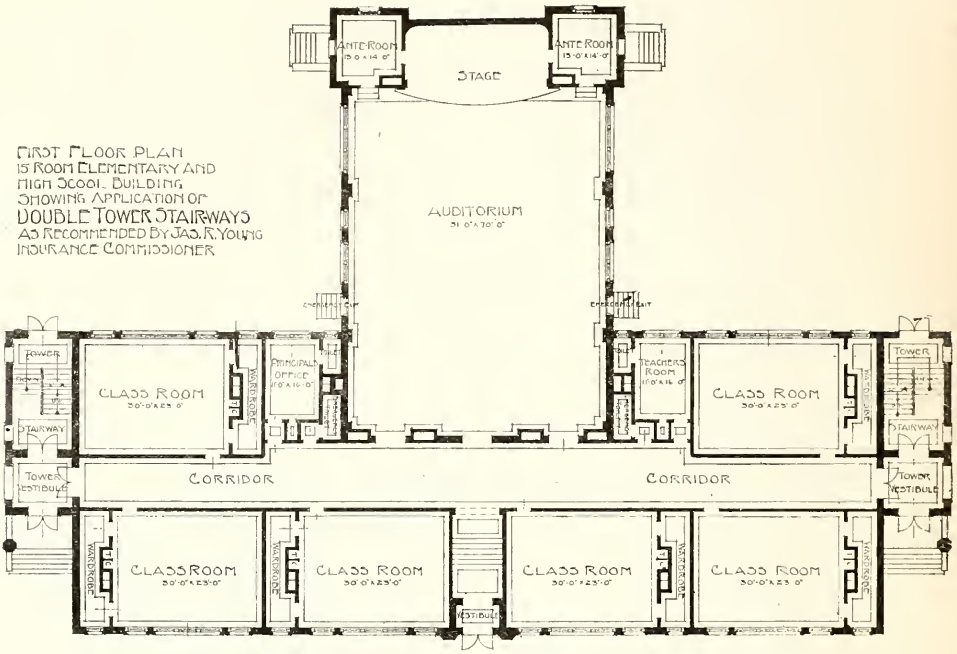
MINNIE L. REDFORD,
Principal R. H. Lewis School.

NOTE.

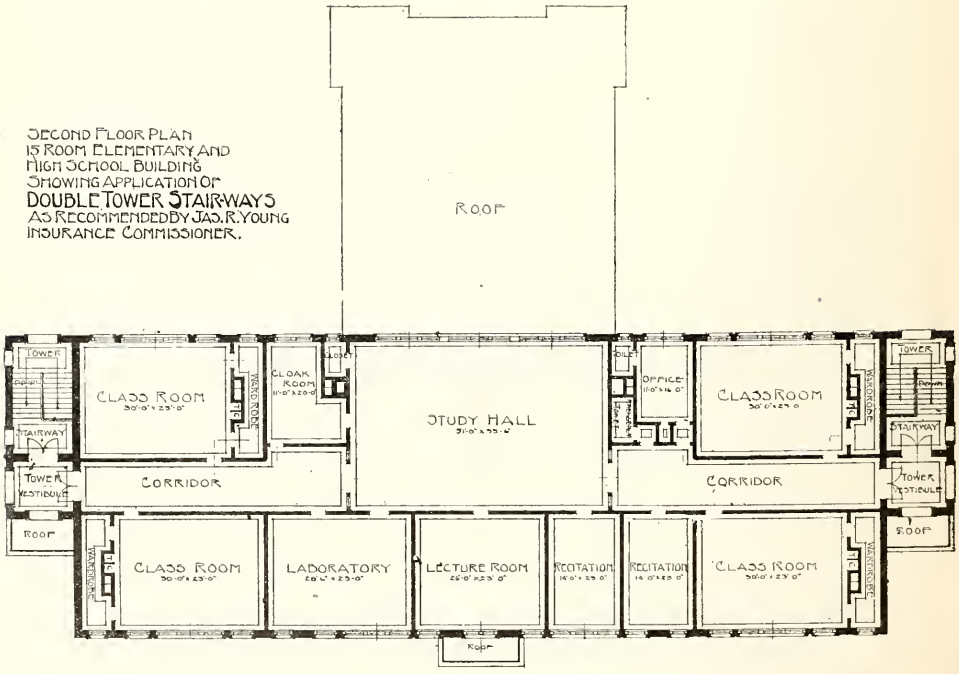
Special attention is called to the cut showing the first floor, second floor, front elevation and the floor plan and elevation of the Double Tower Stairway The size of this tower and its cost depend, of course, upon the size of the building, but in all cases it can be built practically for the cost of the inside stairway, made possible by the saving of space in the building and its cost.



ELEVATION AND DETAIL DRAWINGS
SHOWING THE APPLICATION OF THE
DOUBLE TOWER STAIRWAYS
IN AN ELEMENTARY AND HIGH SCHOOL BUILDING
AS RECOMMENDED BY JAS. R. YOUNG
INSURANCE COMMISSIONER.



First Floor Plan
15 Room Elementary And
High School Building
Showing Application Of
Double Tower Stairways
As Recommended By Jas. R. Young
Insurance Commissioner



Second Floor Plan
15 Room Elementary And
High School Building
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